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Witt

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[54] **TEMPLATE AND WORKPIECE HOLDER AND METHOD FOR USING SAME** 4,644,985 2/1987 Weaver 144/145.1

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[57] **ABSTRACT**

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A workpiece holder includes a template and a pair of slide blocks mounted to the template for slideable movement with respect to the template. The slide blocks and the template can be mounted to a base plate or can be mounted to each other without the use of a base plate. The slide blocks include straight edge surface and L-shaped notched surface which can be reversed to accommodate templates and workpieces of varying shapes.

[51] **Int. Cl.**⁶ **B27M 3/00**; B27C 1/12

[52] **U.S. Cl.** **144/372**; 144/144.51; 144/145.1; 144/145.2; 269/55; 269/246; 409/130

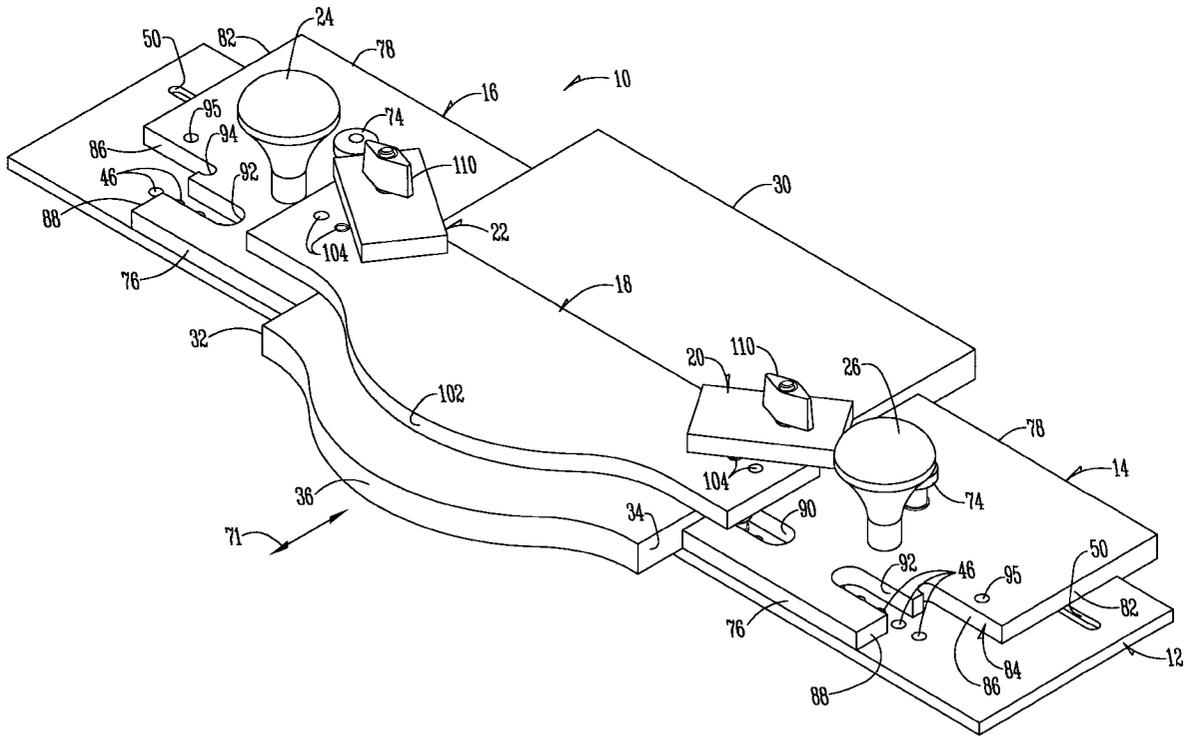
[58] **Field of Search** 144/137, 144.51, 144/145.1, 145.2, 145.3, 371, 372; 269/55, 56, 216, 240, 246; 409/125, 130

[56] **References Cited**

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15 Claims, 8 Drawing Sheets



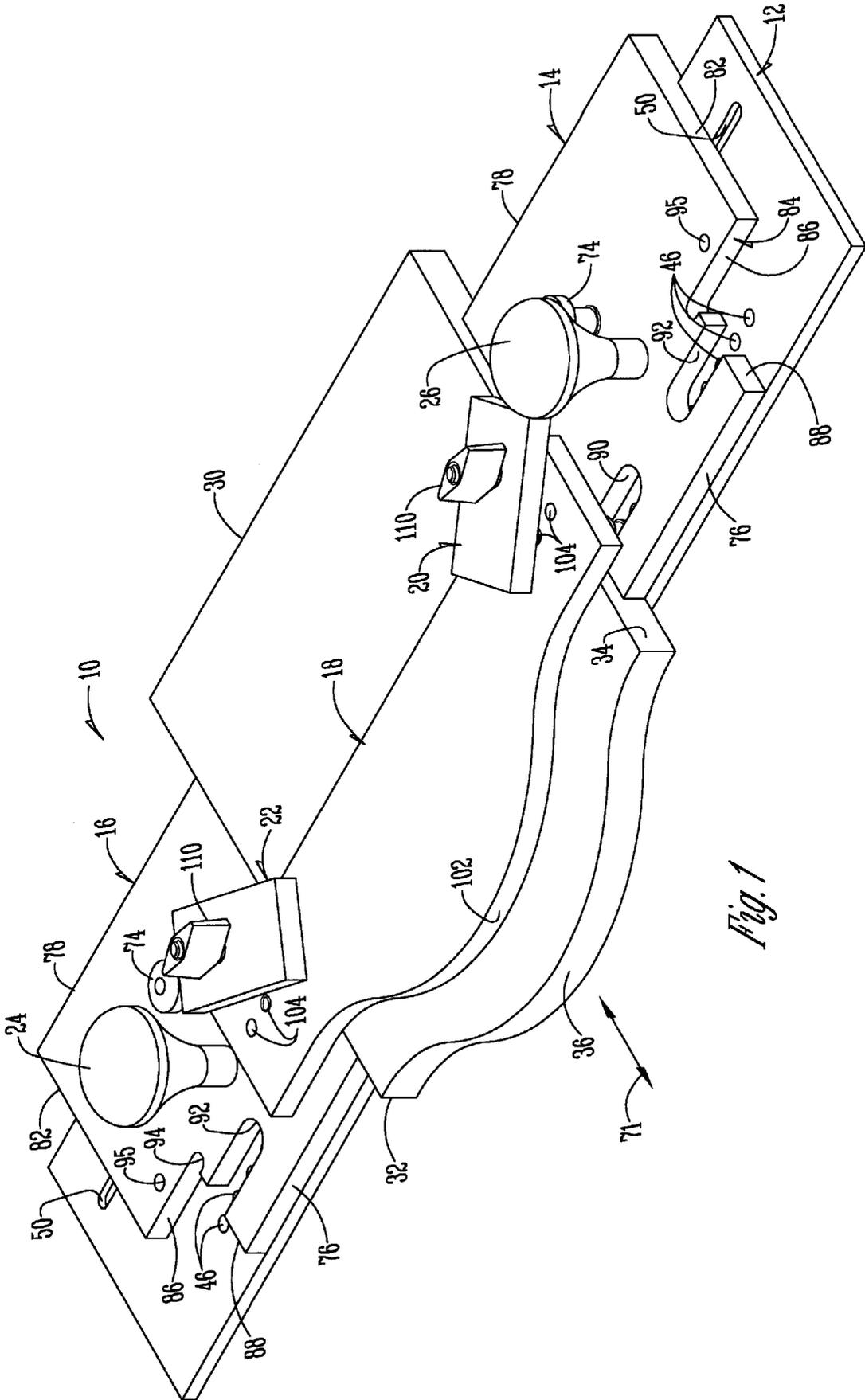


Fig. 1

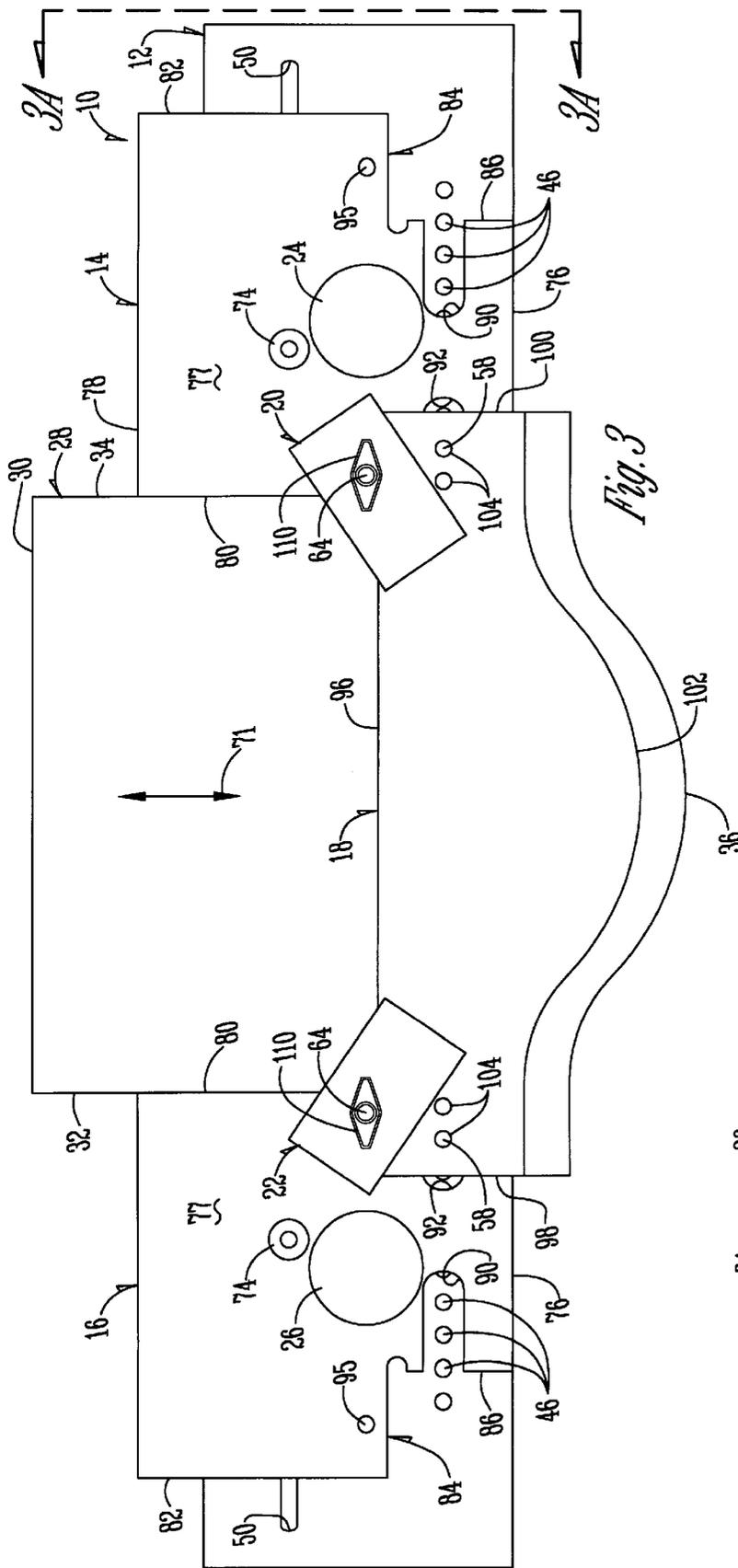


Fig. 3

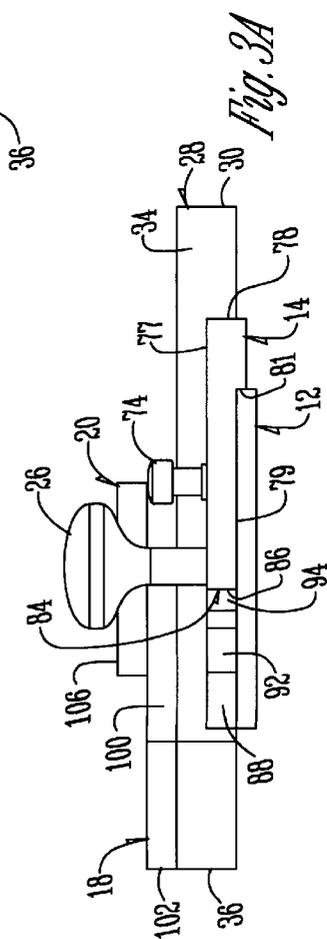
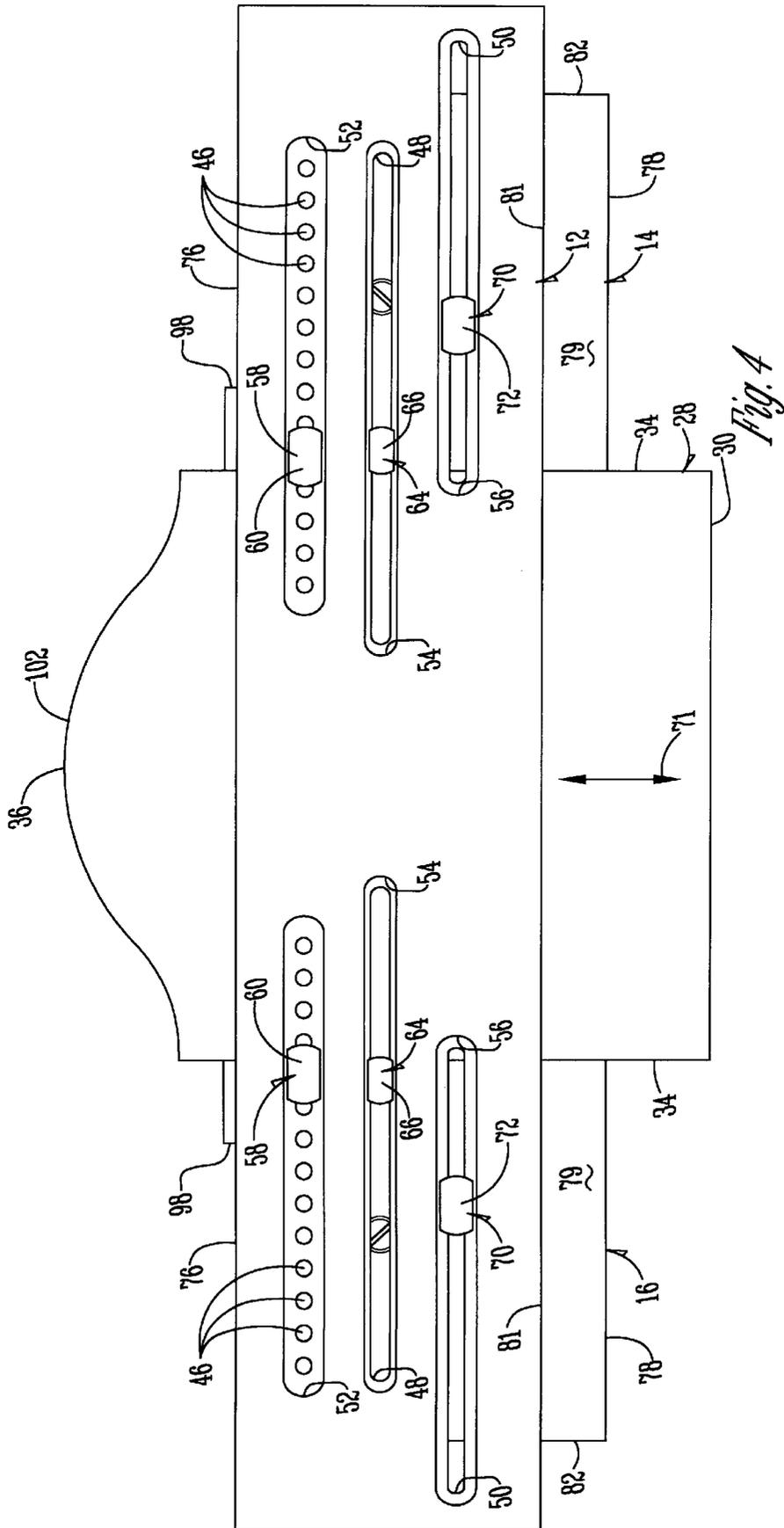


Fig. 3A



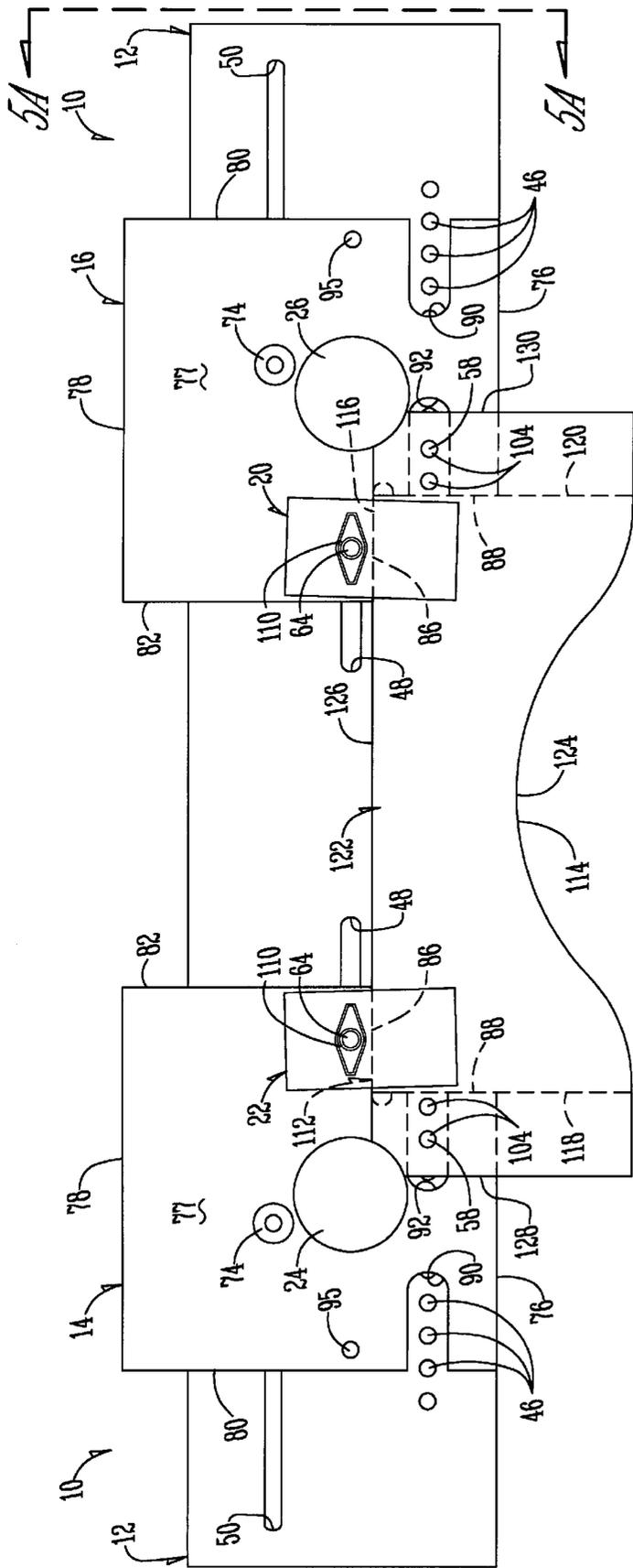


Fig. 5

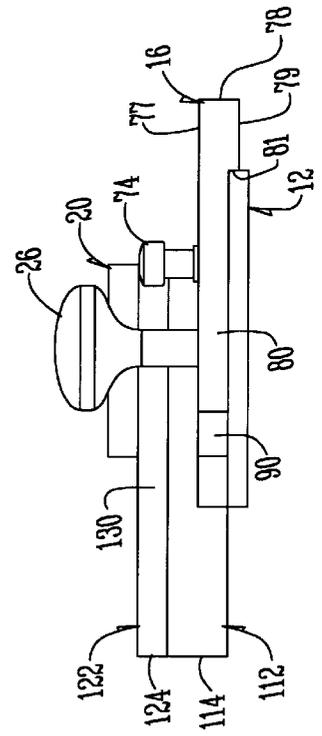


Fig. 5A

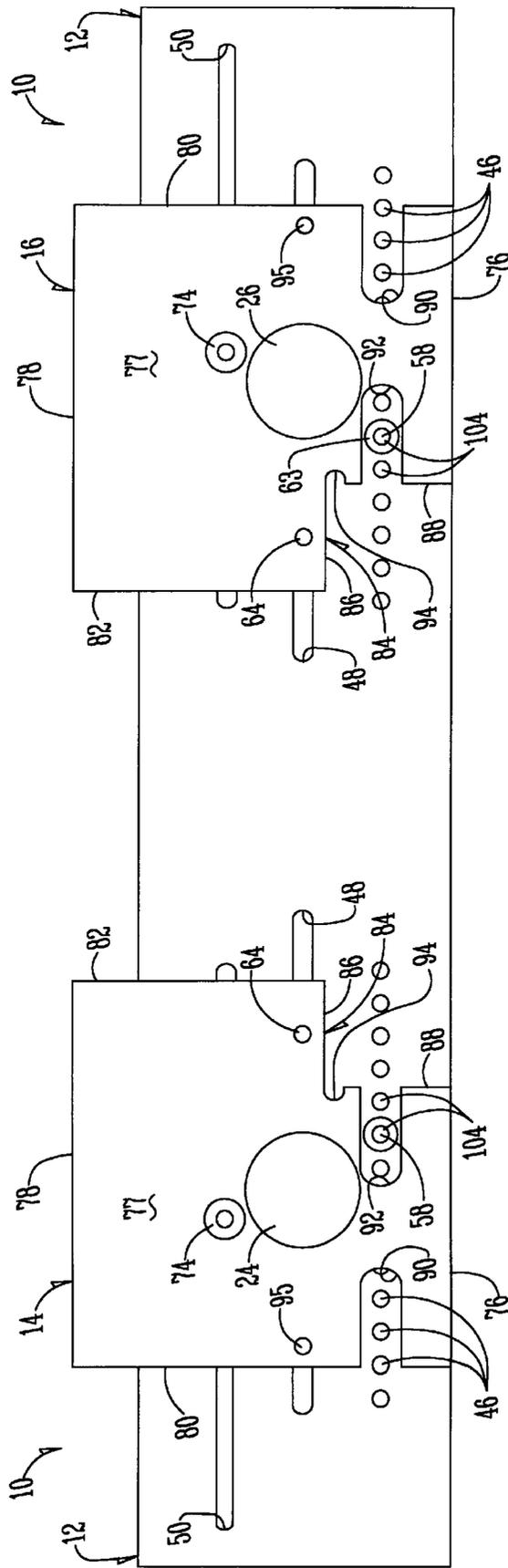


Fig. 6

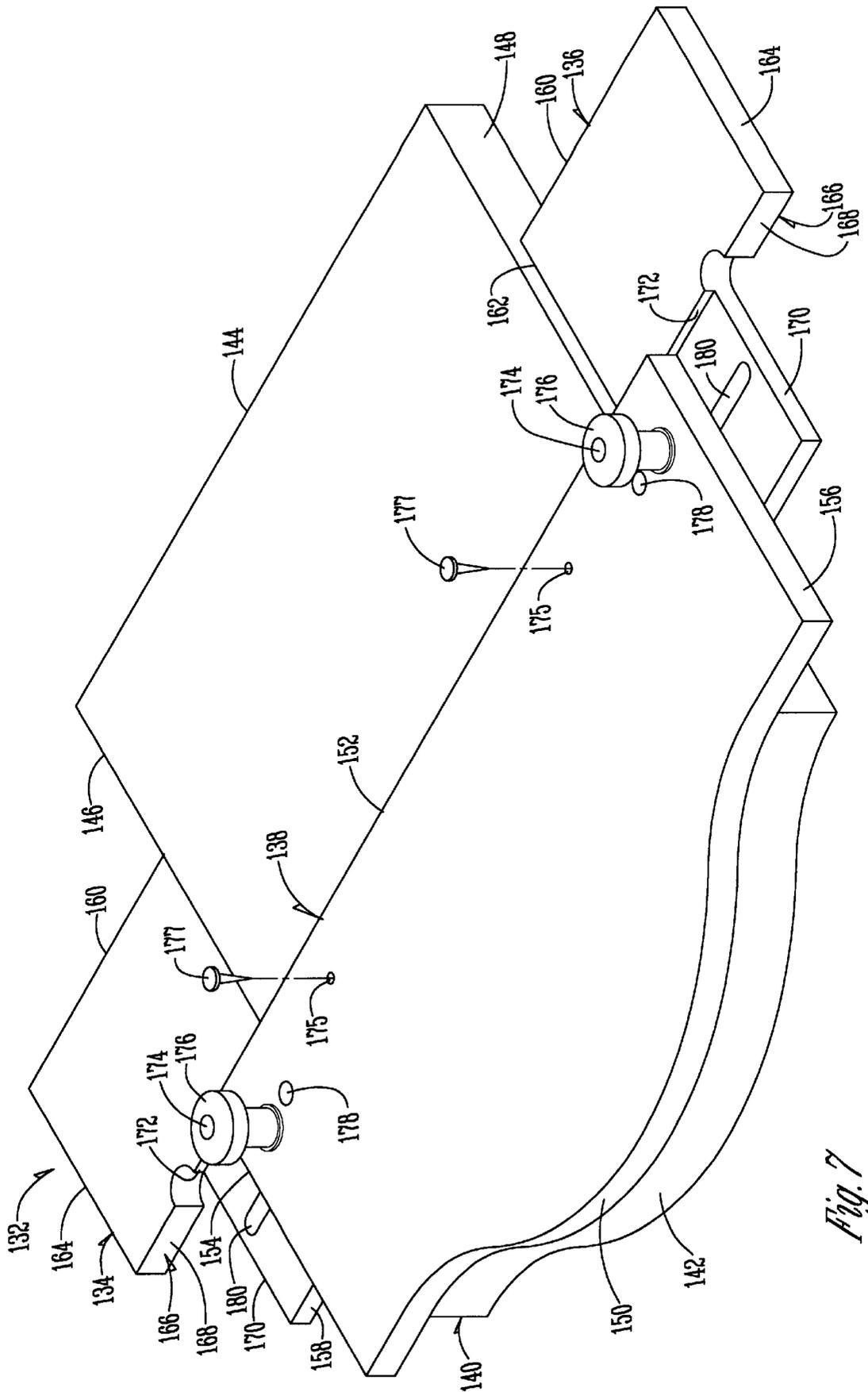


Fig. 7

TEMPLATE AND WORKPIECE HOLDER AND METHOD FOR USING SAME

BACKGROUND OF THE INVENTION

The present invention relates to a template and workpiece holder and method for using same.

In woodworking, when making doors or other types of framed objects, templates are often used for guiding a router or shaper to shape the edges of the door panels, and the door rails. In the use of these templates there is need for a reliable and economical holder for holding both the door panels or rails and the templates during the routing or shaping operation. An example of a prior art holder for this purpose is shown in U.S. Pat. No. 4,644,985. This holder provides means for holding the workpiece and the template and for guiding the workpiece relative to a shaper or router bed so as to provide the appropriate shape for the edge of the workpiece. The device shown in U.S. Pat. No. 4,644,985 is very complicated and expensive, and there is need for a simpler, less expensive holder than shown in this prior art patent.

Therefore, a primary object of the present invention is the provision of an improved template and workpiece holder and method for using same.

A further object of the present invention is the provision of an improved template holder which is simpler and more economical to manufacturer than prior art devices.

A further object of the present invention is the provision of an improved template and workpiece holder which permits the workpiece to be moved into registration with the template for use.

A further object of the present invention is the provision of an improved template and workpiece holder which does not require separate construction for both the shaping of a door panel edge and the shaping of a door rail edge.

A further object of the present invention is the provision of an improved template and workpiece holder which includes sliding blocks that can be reversed for use with different types of templates.

A further object of the present invention is the provision of an improved template and workpiece holder which includes sliding blocks capable holding the workpiece against movement into orthogonal directions relative to the template.

A further object of the present invention is the provision of an improved template and workpiece holder which is economical to manufacture, durable in use and efficient in operation.

SUMMARY OF THE INVENTION

The foregoing objects may be achieved by the invention, which in its simplest form includes a template having first and second end edges, a forward guide edge for guiding a cutting tool relative to a workpiece, and a rear edge. First and second sliding blocks are provided each including a front edge, a rear edge, first and second side edges, and upper surface, and a lower surface. The upper surface includes a straight edge shoulder. First and second locking members mount the first and second sliding blocks to the template and are movable from an unlocked position permitting relative sliding movement between the template and the sliding blocks to a locked position preventing relative movement between the template and the sliding blocks. The straight edge shoulders of the first and second sliding blocks engage the rear edge of the template and slide there along to

maintain the first and second slide blocks in a predetermined rotational orientation during sliding movement with respect to the template. In one form of the invention straight side edge portions of the sliding blocks engage the workpiece so as to permit the workpiece to slide parallel to the side edges of the slide box.

The sliding blocks are reversible however to provide L-shaped notches facing the workpiece so that the notches engage both the side edges and the rear edges of the workpiece to properly position the workpiece relative to the template.

In another embodiment of the invention, slide blocks having essentially the same shape are used, but a base plate is added. The sliding blocks are slideably mounted on the base plate, and the workpiece is positioned on the base plate between the sliding blocks. The sliding blocks are reversible in the same fashion as described above for the more simplified embodiment. In this second embodiment the template is immovably mounted with respect to the base plate whereas the sliding blocks and the workpiece are slideably movable with respect to the base plate and the template.

BRIEF DESCRIPTION OF THE FIGURES OF THE DRAWINGS

FIG. 1 is a perspective view of preferred embodiment of the present invention.

FIG. 2 is an exploded perspective view of the embodiment shown in FIG. 1.

FIG. 3 is a top plan view of the embodiment shown in FIG. 1.

FIG. 3A is a side elevational view taken along line 3A—3A of FIG. 3.

FIG. 4 is a bottom plan view of the embodiment shown in FIG. 1.

FIG. 5 is a top plan view of the embodiment shown in FIG. 1, but having the slide blocks reversed to accommodate a door rail template and workpiece.

FIG. 5A is a side elevational view taken along line 5A—5A of FIG. 5.

FIG. 6 is a view similar to FIG. 5 but showing the template and workpiece removed.

FIG. 7 is a perspective view of a modified and simplified embodiment of the present invention.

FIG. 8 is an exploded perspective view of the device shown in FIG. 7, showing the slide blocks reversed for accommodating a door rail.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1-4, a template and workpiece holder 10 is shown and includes a base plate 12, slide plates 14, 16, a template 18, clamp assemblies 20, 22, and handles 24, 26. A door panel workpiece 28 is shown for use with the holder 10. Workpiece 28 includes a rear edge 30, opposite side edges 32, 34, and a front edge 36 which represents the top of the door panel and which is usually curved to predetermined configuration.

Base 12 includes a front edge 38, a back edge 40, and edges 42, 44. A row of indexing holes 46 is provided along the front edge 38 of the base plate 12. Also extending parallel to the row of indexing holes 46 is a clamp slot 48 and a slide block slot 50. Referring to FIG. 4, the bottom surface of base plate 12 includes an elongated indexing channel, an elongated clamp channel and an elongated slide

block channel. Template bolts **58** extend through the holes **46** and have their heads **60** slideably mounted within the indexing channel **52**. The shanks **62** of bolts **58** extend upwardly through the holes **46** and a adapted to receive the template **18** in a manner to be described hereafter. Bushings **63** are provided on the shanks **60** above the base plate **12**.

A pair of clamp bolts **64** extend upwardly through clamp slot **48** and include heads **66** slideably fitted within the clamp channel **54**. Bolts **64** include shanks **68** which extend upwardly above the upper surface of base plate **12**.

A pair of slide block bolts **70** include a head **72** fitted within slide block channel **56** for sliding movement in channel **56**. Slide block bolts **70** include shanks (not shown) extending upwardly through grooves **50** and having nuts **74** threadably mounted thereon.

Slide plates or blocks **14, 16** are mounted on the upper surface of the base plate **12** for sliding movement thereon. Slide plates **14, 16** each include a front edge **76**, a rear edge **78**, a straight side edge **80** and a notched side edge **82**. The notched side edges **82** include L-shaped notches **84** each having a first leg **86** and a second leg **88**. Slide plates **14, 16** also include first and second indexing grooves **90, 92** for engaging the bushing **63** of shanks **62** of the template bolts **58**. Slide plates **14, 16** also include template grooves **94** located at the juncture between first and second legs **86, 88** of L-shaped notch **84**. A pair of spaced apart holes **95** are provided in the sliding blocks **14, 16** for receiving the shanks **68** of clamp bolts **64**.

Template **18** includes a rear edge **96**, a pair of end edges **98, 100** and a front guide edge **102** is shaped to conform to the desired shape of the top edge of the door panel workpiece **28**. Template **18** is provided with two or more holes **104** for receiving the shanks **62** of template bolts **58**.

Clamps **20, 22** each comprise a clamping plate **106** having a hole **108** therein for receiving the shanks **68** of clamp bolts **64**. Nuts **110** are threadably mounted upon the shanks **68**.

In operation, the slide blocks **14, 16** are mounted on the base plate **12** in the manner shown in FIG. 2. The straight side edges **80** are faced toward one another. Nuts **74** are loosened as are the nuts **110** of the clamps **20, 22**. This permits the slide blocks **14, 16** to slide longitudinally on base plate **12** with the slide block bolts **70** sliding in grooves **50**. The bushings **63** are fixed relative to the base plate **12**, but are free to slide within first indexing groove **90** of the slide plate **14, 16**.

The workpiece **28** is positioned between the two slide plates **14, 16** with the side edges **32, 34** of the workpiece **28** sliding against the straight edges of slide plates **14, 16**. The slide plates **14, 16** are moved toward one another so that they embrace the opposite sides **32, 34** of the workpiece **36** as shown in FIG. 1.

Next the template **18** is mounted over the shanks **62** of template bolts **58** and is permitted to slide down into engagement with the upper surface of the workpiece **36** as shown in FIG. 1. With the slide plates **14, 16** still loose, the workpiece **28** is free to slide longitudinally in the direction indicated by arrows **71** until the front edge **36** is registered with the front edge **102** of template **18**. The front edge **36** is precut to generally conform to the front edge **102**. Sliding movement of the slide blocks **14, 16** permits the centering of the workpiece **28** relative to the template **18**, and sliding movement of the workpiece in the direction indicated by arrows **71** permits the workpiece **28** to be moved in registration with the front edges **102** of the template and **36** of the workpiece in registered alignment.

The nuts **74, 110** are then tightened down so that the slide blocks are held against movement and so that the clamps **20,**

22 are clamped downwardly on the template. Because the template is slideably mounted over the shanks **62** of the template bolts **58**, the tightening of the nuts **110** causes the workpiece **28** also to be held against movement with respect to the holder **10**.

The slide blocks **14, 16** each include a top surface **77** and a bottom surface **79** which is provided with a forwardly facing guide shoulder **81** that slides against the rear edge **40** of the base plate **12**.

The operator then simply grasps handles **24, 26** and moves the entire holder **10** with the workpiece **28** clamped thereto on to the work surface of a router or shaper table (not shown). The base plate **40** is permitted to slide on the work surface of the router or shaper table, and the template **18** guides against a guide collar on the shaper or router bit. This permits the shaper or router bit to engage and properly shape the surface **36** of the workpiece **28**.

FIGS. 5 and 6 show the use of the holder **10** for holding a door rail workpiece **112** rather than the door panel workpiece **36** shown in FIGS. 1-4. The door rail workpiece includes a front edge **114**, a rear edge **116**, and end edges **118, 120**.

A rail template **122** is used in the place of door panel template **18** and includes a first guide edge **124**, a rear edge **126**, and end edges **128, 130**.

The slide blocks **14, 16** are reversed from the position shown in FIGS. 1-4. This places the notched side edges **82** to a position wherein they face inwardly toward one another and the straight edges **80** face outwardly.

The slide blocks **14, 16** are moved toward and away from one another until the first legs **86** of the L-shaped notches **84** engage the end edges **120** of the door panel rail workpiece **112**. The door panel workpiece **112** is then moved rearwardly until the rear edge **126** thereof engages the second legs **86** of the L-shaped notches **84**. This positions the door panel rail **112** both in a forward rear direction and in a side to side direction relative to the template **122**. The slide blocks **14, 16** can be moved until the workpiece **112** is centered with respect to the template **122**.

Referring to FIGS. 7 and 8 a simplified holder **132** is shown. Holder **132** includes a pair of slide blocks **134, 136** and a door panel template **138**.

A door panel workpiece **140** includes a front edge **142**, a rear edge **144** and opposite side edges **146, 148**.

The template **138** includes a front guide edge **150**, a rear edge **152** and opposite end edges **154, 156**.

The slide blocks **134, 136** each include a front edge **158**, a rear edge **160**, a straight side edge **162** and a notched side edge **164**. Notched side edge **164** includes an L-shaped notch **166** having a first leg **168** and a second leg **170** disposed perpendicular to one another. A guide shoulder **172** extends along the upper surface of each of the slide blocks **134, 136**.

A template bolt **174** extends upwardly through a guide slot **180** in each of the slide blocks **134, 136** and extends through bolt holes **178** of template **138**. A nut **176** is threaded over the upper surface thereof and when tightened, nut **176** holds the slide blocks **134, 136** against movement relative to the template **138**.

In operation, the nuts **176** are loosened so as to permit the slide blocks **134, 136** to slide longitudinally relative to the template **138**. The shoulders **172** on slide blocks **134, 136** bear against the rear edge **152** of the template **138** so as to orient the slide blocks **134, 136** properly. Slots **180** also provide guidance to the bolt shanks **174** during this sliding

movement. The slide blocks are moved until the straight edges **162** are in engagement with the side edges **146, 148** of workpiece **140**. The workpiece **140** is then moved to a position wherein the front edge **142** of the workpiece **140** is registered with the front guide edge **150** of template of **136**. This involves sliding movement of the workpiece from front to rear and also involves sliding movement of the slide blocks **134, 136** relative to the template **138** so as to center the guide edge **150** of template **158** with the front edge **142** of the workpiece **140**. Then nuts **176** are tightened down and tacks or screws **177** may be inserted through optionally provided tack or screw holes **175** into the workpiece **140** to hold the template to the workpiece.

Holder **132** functions in much the same manner as holder **10**, but does not utilize base plate which holder **110** utilizes. The slide plates **134, 136** can be reversed to accommodate a door panel rail in the manner shown in FIG. **8**.

As shown in FIG. **8**, the holder **132** is shown adapted for use with a rail template **182** and a rail workpiece **184**. The rail workpiece includes a front edge **186**, a rear edge **188**, and opposite end edges **200, 202**.

The template **182** includes a front guide edge **204**, a rear edge **206** and opposite end edges **208, 210**.

The slide blocks **134, 136** are reversed from the position shown in FIG. **7**, so that the L-shaped notches **166** are positioned facing one another and the straight edges **162** are positioned facing away from one another. The template **182** is secured to the slide blocks **134, 136** by means of nuts **176** threaded over bolts **174**. In this position the rear edge **206** of rail **182** slides against the guide shoulders **172** of slide blocks **134, 136**. The rear edge **188** of the workpiece **184** fits against the legs **168** of the slide blocks **134, 136** so as to limit its rearward movement relative to the slide blocks **134, 136**. The end edges **200, 202** of the workpiece bear against the legs **170** of the L-shaped notches **166** as shown in FIG. **8**. Thus the legs **168, 170** position the workpiece **184** both in a right to left position and in a front to back position relative to the template **182**. The slide blocks **134, 136** and the workpiece **184** can be moved longitudinally relative to the template **182** until proper registration of the surfaces **186, 204** is obtained. Then the nuts **176** are tightened down and tacks or nails **212** are inserted through tack or nail holes **214** and inserted into the workpiece **184** to hold the holder **132** to the workpiece **134**. The combined holder **132** and the workpiece **184** can then be used on a router or shaper table to shape the front edge **186** of the workpiece **184**.

In the drawings and specification there has been set forth a preferred embodiment of the invention, and although specific terms are employed, these are used in a generic and descriptive sense only and not for purposes of limitation. Changes in the form and the proportion of parts as well as in the substitution of equivalents are contemplated as circumstances may suggest or render expedient without departing from the spirit or scope of the invention as further defined in the following claims.

What is claimed is:

1. In combination:

a workpiece having upper and lower flat surfaces, first and second opposite side edges, a front edge, and a rear edge;

a base having a flat upper surface;

first and second slide blocks embracing the workpiece therebetween, each of the slide blocks being mounted to the base for sliding movement thereon;

a first stop member engaging both the first sliding block and the base;

a second stop member engaging both the second sliding block and the base;

each of the first and second stop members being selectively movable from a locked position holding the first and second sliding blocks and the workpiece embraced therebetween against sliding movement relative to the base to an unlocked position permitting sliding movement of the first and second sliding blocks and the workpiece embraced therebetween relative to the base;

a template;

a template holder mounting the template to the base and holding the template against movement with respect to the base during sliding movement of the blocks and the workpiece.

2. A combination according to claim 1 and further comprising a first clamp mounted on the first sliding block and a second clamp mounted on the second sliding block, the first and second clamps each being movable from an unclamped position permitting movement of the workpiece relative to the slide blocks, the base, and the template, to a clamped position holding the workpiece against relative movement with respect to slide blocks, the base, and the template.

3. A combination according to claim 2 wherein the template is positioned above the workpiece and engages the upper surface thereof.

4. A combination according to claim 3 wherein the clamps engage the template and clamp the workpiece between the template and the base when the clamps are in their clamped position.

5. A combination according to claim 1 wherein the workpiece includes first and second side edges, a front edge, and a rear edge, the slide blocks each having a substantially straight edge and being in a first position wherein the straight edges of said slide blocks each slideably engage one of the first and second side edges of the workpiece and embrace the workpiece therebetween so as to permit the workpiece to slide in a direction parallel to the straight edges of the slide blocks.

6. A combination according to claim 5 wherein the workpiece is a door panel, and handles are connected to the base for moving the front edge of the door panel into engagement with a tool for shaping the front edge of the door panel.

7. A combination according to claim 5 wherein the slide blocks each include a notched edge containing a first leg edge and a second leg edge, the slide blocks being rotatable from their first position to a second position wherein the notched edges engage the workpiece with the first leg edges engaging the side edges of the workpiece and the second leg edges engaging the rear edge of the workpiece.

8. A combination according to claim 7 wherein the workpiece is a door rail intended for attachment to an edge of a door panel, and handles are connected to the base for moving the front edge of the door rail into engagement with a tool for shaping the front edge of the door rail.

9. In combination:

a template having first and second end edges, a forward guide edge for guiding a cutting tool relative to a workpiece, and a rear edge;

a first sliding block and a second sliding block each having a front edge, a rear edge, a first side edge, a second side edge, an upper surface and a lower surface, the upper surface having a straight edge shoulder;

first and second locking members mounting the first and second sliding blocks to the template, the mounting

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members being movable from an unlocked position permitting relative sliding movement between the template and the sliding blocks, to a locked position preventing relative movement between the template and the sliding blocks;

the straight edge shoulders of the first and second sliding blocks engaging the rear edge of the template to maintain the first and second slide blocks in a predetermined rotational orientation during sliding movement with respect to the template with portions of the first side edges of the first and second sliding blocks being parallel to and facing one another.

10. A combination according to claim **9** and further comprising a workpiece having first and second opposite side edges, a rear edge, a front edge, an upper surface, and a lower surface, the first and second sliding blocks engaging the first and second side edges of the workpiece, the forward guide edge of the template being positioned adjacent the front edge of the workpiece.

11. A combination according to claim **10** wherein the first side edges of the first and second sliding blocks are substantially straight along their entire lengths, the second side edges of the first and second sliding blocks each having an L-shaped notch formed therein comprising a first leg and a second leg extending approximately perpendicular with respect to one another.

12. A combination according to claim **11** wherein the first and second sliding blocks are reversible with respect to one another from a first position wherein the first side edges thereof engage the first and second side edges of the workpiece to a second position wherein the second side edges thereof engage the workpiece with the first legs engaging the first and second side edges of the workpiece and the second legs engaging the rear edge of the workpiece.

13. A method for holding and moving a workpiece having first and second opposite side edges, a rear edge, and a front edge intended for engagement with a cutting tool having a guide collar thereon, the method comprising:

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taking a template having a guide edge of predetermined shape for guiding the workpiece relative to the cutting tool;

pre-shaping the front edge of the workpiece to conform generally with the guide edge of the template;

placing the workpiece between a first slide block and a second slide block, the first and second slide blocks being connected either directly or indirectly to the template for sliding movement with respect thereto;

moving the workpiece and the first and second slide blocks relative to the template to position the guide edge of the template adjacent to and in approximate registration with the front edge of the workpiece;

moving the first and second secured slide blocks, template, and workpiece into engagement with the cutting tool with the guide edge of the template engaging and being guided against the guide collar of the cutting tool.

14. A method according to claim **13** wherein the first and second slide blocks each include a straight edge which is straight along its entire length, the method further comprising placing the straight edges of the first and second slide blocks in engagement with the first and second opposite side edges respectively, of the workpiece, the moving step comprising sliding the workpiece parallel to the straight edges of the first and second slide blocks and moving the first and second slide blocks and the workpiece in a direction perpendicular to the straight edges of the workpiece.

15. A method according to claim **14** wherein the first and second slide blocks each include an L-shaped notch which includes first and second legs disposed perpendicular to one another, the method comprising reorienting the first and second slide blocks so that the first legs of the L-shaped notches are in engagement with the rear edge of the workpiece and the second legs of the L-shaped notches are in engagement with the first and second side edges of the workpiece respectively.

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